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IN SEARCH OF POLYGYRA PILSBRYI.

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In the month of February, both in 1899 and 1900, I made trips to Arkansas for health and shells, and on both occasions stopped at Hardy, Sharp county, Ark., on Spring River, which heads at the famous Mammoth Springs, in Missouri. This part of America at some time was plainly lifted by an enormous upheaval, and the limestone came down without regard to good order. The highest points are probably 1000 feet above the sea.

Spring river is a beautiful stream. The water so pure and deep is of a Nile green in color, but in every half mile or so at this point there is a natural dam, covered with fine unios and "periwinkles." When Messrs. Sterki and Simpson have helped me over the hard places, a list of these will be given. I found this year one new *Unio* anyhow.

Half of one day this year was given to Little Rock, where good collecting is to be found in a rocky bluff near the Iron Mountain bridge.

Upon both trips I jumped to DeKalb, Bowie county, Texas. Last year I went with a party of turkey hunters as far as Little River, in the Choctaw Nation, all in the low lands, then by rail to Tahskahoma and Poteau, on the Frisco road—another blown-up limestone country. In this part of the Indian nation the road passes between two mountain ranges. It is the prettiest of landscapes, and I am sure in the month of May the snails swarm out of the damp corners and fern-clothed rocks in great numbers to view the scenery. Judging by the government maps of near-by territory, these mountains are about

1,000 or 1,500 feet above the sea. From Poteau, Sugarloaf, a dozen miles away, could be seen, and this knob runs up to 2,000 feet; but a cold wave drove me home before I could make this mountain a visit.

In three days, at Poteau and Tushkahoma I found *Polygyra Binneyana* Pils., *Poly. divesta indianorum* Pils., *Poly. dorfeuilliana percostata* Pils. and *Gastrodonta demissa lamellata* Pils. These places are about 80 and 40 miles east of Limestone Gap, where Simpson found *Poly. kiowaensis*; 50 miles west of Mena, and Mena is 70 west of Hot Springs, where *Poly. kiowaensis arkansaensis* Pils. was found. I never saw either, and I hunted hard.

But in the winter many shells surely could not be found. It was next to impossible to find a mature *Omphalina friabilis* or a *Pyramidula solitaria* alive, but their dead shells were common. Perhaps many of these species, as in the Tennessee mountains, are clannish sticklers for locality.

The *P. dorfeuilliana*, *monodon* and *G. demissa* colonize under logs, a pine log sometimes if charred, but the oaks with a rough bark suit them better. The Mesodons were found by digging. In fact nearly all of my new shells were found by quarrying. The first was *Poly. cragini*, described by Call. This I found on my old farm at Thayer, Kansas, while quarrying sandstone in search of fossil plants. Since then I have been a great digger, looking on the well-drained and ventilated rock, dampened only by the soil, as the best locality to find a new species. High up on the mountains is good ground, I have always supposed because it is a poor place for lazy collectors.

This year a Texas friend, who had a team, wagon and canvas cover, went with me from DeKalb, Texas, to Naples, Texas, on one trip, and then to Mena, Arkansas. I walked, and rolled over the rocks and logs, and he good-naturedly drove the team, and at good places stopped the procession and helped gather the shells. In this journey of over 200 miles I do not think I rode over 15, and I do not think he walked that far, except in our side journeys on foot. At night we made a shed of our wagon sheet, and with a roaring pitch-pine fire in front and plenty of blankets, got along nicely through snow and rain, or when the thermometer dropped to zero a few times.

The rivers were high after having been very low, but we could tell by the remains that it was a very rich region in *Unionidæ* for the seasonable comer. From Naples to the mountains, *P. dorfeuilli-*

ana, *monodon alicia*, *cragini* and *thyroides* were the rule, except on a chalky uplift called Rocky Comfort in Arkansas. Here we found *Helicina orbiculata tropica*, *Bulimulus dealbatus* and *Omphalina friabilis* in the uplands, and *Poly. texasiana* (banded) and *Poly. monodon friersonii* in low land.

Striking the hill country near Horatio, under the first stone outcrop we found *P. albolabris Alleni* and the first *Poly. Binneyana* I had seen alive. Wherever we found a shaded hill-top after that, with an outcrop of rock, we found these shells; and from the number of "bones" scattered about, they must be plentiful on warm spring days. Sometime I hope to get enough for all of my friends. We occasionally found *P. Binneyana* traveling, for there were times a week together when we walked in our shirt sleeves and the frogs and birds were singing.

P. albolabris was found more frequently under logs, but I found only one *binneyana* in that situation. Two *P. albolabris allenii* here usually hibernate together, just under the soil, face upwards. At Hardy I found as many as eight under one log, but the Hardy shell seems to me another variety, or a subdivision of a variety. It is the same as I have found in Kansas, smaller than the *Mena allenii*, more solid and compact, and more perfectly opaque.

From Horatio to Mena it is a clay hill country, and the shells were much the same. At Mena we seemed to strike a truly snail territory. Here the Rich Mountain range is 2,750 feet above sea level, the Fourche and Black Fork ranges were about as high, the Chastats about 2,000 feet, and it was but a little distance to the Magazine Mountain and the Petit Jean range, as high as the Rich Mountains. I found deep, mossy, ferny coves that in the Tennessee mountains would be jeweled with snails. *Gastrodonta demissa brittsi* here was large as *acerra*, and the species were more numerous. It looked altogether more promising. Some day, with an industrious collector, I should like to start from Hardy and never stop until we had gone into the panhandle of Texas. Limestone bluffs and coves are on every hand. There could be new shells every day. With the exception of Simpson's visit to Kiowa, in the Indian nation, and my own trips, the rocks were probably never scratched.

The following is my catch, named with much assistance from Mr. Pilsbry, numbered after the Pilsbry check list:

9a. *Helicina orbiculata tropica* Say. DeKalb, Lanesport, Rocky Comfort, Gilham, Mena.

48. *Vallonia pulchella* (Müll.). Lanesport, one specimen in 1899.

68. *Polygyra leporina* (Gld.). From Mt. Pleasant to Horatio, the animal black as *Z. nitidus* (Müll.), in damp situations, under logs and stones, or feeding about near by; active in winter.

70. *Poly. Dorfeuilliana* Lea. Naples to Mena, sometimes over one hundred in little pockets under logs and stones in well-drained soil. Every lot seemed a little different in color or size, and upon this last trip I collected 1,281. It is abundant in my travels from Arkansas City, Kansas, to Hardy, North Arkansas, to Waco, Texas, and all in between.

70a. *Poly. Dorf. Sampsoni* Weth. Tushkahoma, Ind. Ter., 1899. Fairly plentiful in the rocks.

70b. *Poly. Dorf. percostata* Pils. Poteau, Ind. Ter., 1899. Fairly plentiful on dry mountain side under slabs of sandstone and small logs.

72. *Poly. Jacksoni* Bld. At Poteau in '99. One large specimen found at Mena this year "of the variety with wholly closed axial perforation not uncommon at Fort Gibson."

79. *Poly. Terasiana* (Moric.) Opposite Lanesport in Texas, at Rocky Comfort and Chapel Hill, Ark., next to the water under drift. At Rocky Comfort, banded.

95c. *Poly. Cragini* (Call). Naples, to Mena, under logs in low land, usually. The animal is black and the shell more robust and about one mm. larger than the Kansas type, which is $8\frac{1}{2}$ and 9. The types are a bright, cherry red, these of Ark. nearer the flat corneous brown color of the usual *P. thyroides*.

97. *Poly. inflecta* (Say). Rocky Comfort to Mena.

109a. *Poly. albolabris Alleni* (Wetherby). Horatio to Rich Mountain Station, and at Tushkahoma, I. T. This variety has a thin shell and the color same as *divesta*, glossy. Measures from 28 mm. to 32, and in some cases the umbilicus is partly open.

110. *Poly. exoleta* (Binn.) Mena.

112. *Poly. divesta* (Gld.) A few dead specimens in '99 at Tushkahoma.

112a. *Poly. divesta indianorum* (Pils.) a few dead specimens and young (now alive in my snailery), at Tushkahoma and Poteau in 1899.

112-1. *Poly. Binneyana* (Pils.) a few dead shells and young at Tushkahoma and Poteau in 1899, and one dead at Hardy in drift.

I found it this year from Horatio to Rich Mountain most plentiful in the rocks scattered over the creek bottoms near the city of Mena, in company with *Gastro. demissa Brittsii* and *Poly. hirsuta uncifera*. The measurements were from 23 diam. 11 alt., to 28 mm. diam., 13 alt.; all $5\frac{1}{2}$ whorls. In the Chastat Mountains four miles south I found a smaller variety and got a few alive by digging down a couple of feet. These ran from 16 diam., 8 alt., to 20 diam., 9 alt., with not quite 5 whorls.

124. *Poly. thyroides* (Say). DeKalb to Mena, occasionally, under logs in damp situations. Pilsbry will have much to say on this species, I think, as they run from the *clausa* size to the largest *thyroides*, and were so without regard to locality. The large size were usually found in situations suitable for *multilineata*, while the smaller were about the rocks and under logs upon higher ground.

134-1. *Polygyra Pilsbryi*, n. sp. Shell imperforate, lens shaped, about equally convex above and below, corneous-brown, the surface rather glossy, sculptured above with strong, slightly curved, uneven riblets, running with the growth lines; the riblets on the base very uneven or interrupted as though composed of compressed radial laminae, arranged in several concentric circles. Whorls fully 5, slowly increasing, the last carinated at the periphery, abruptly and shortly deflexed in front. Aperture basal, hook-shaped or like the letter "J" reversed; contracted by a long, arcuate parietal lamella, which extends to the axis and is decidedly curved in, or entering, at its outer end, and is connected with the end of the outer lip by a slight callous ridge. Basal lip reflexed and prostrate, with a rather shallow median notch, much more conspicuous in a front than in a basal view. Alt. 5, diam. 10 mm. Rich Mountain Station (Mt. Mena), Polk Co., Arkansas, on mountain, by roadside leading from R. R. station to the hotel, two specimens (one dead).

Allied to *P. labrosa*, from which it differs in the remarkable sculpture and the form of the basal lip and notch. This shell was picked up by my partner, Mr. Jolly.

At the suggestion of Bryant Walker it is named in honor of Dr. Henry A. Pilsbry, the very one who of late years has given conchologists the most delight, by his enormous zeal and industry, and his untiring exactness. I was instructed by Mr. Walker to find something for the occasion as large as *indianorum* or *Ferrissi*, but this shell has unusual features to make up for the disappointment in

size. It is the best novelty in American shells found, I believe, for some time.

138. *Poly. stenotrema* (Fer.). Found a few on the slope of the Chastat Mountains south of Mena.

139c. *Poly. hirsuta uncifera* (Pils.) n. var. In both the Chastat and Rich Mts. at Mena. From its silvery, clean appearance and unusually prominent basal lip, I believed this to be a new variety, and gathered all I could find. When one is out in the woods, by the way, he cannot always tell what is what.

141a. *Poly. monodon fraterna* (Say). Rocky Comfort on the bank of a creek in company with *friersoni* and *aliciae*.

141b. *Poly. monodon aliciae* (Pils.). Mt. Pleasant and Naples, Texas, to Horatio and Ultima Thule, Ark.

141d. *Poly. monodon friersoni* (Pils.). DeKalb, Texas; Rocky Comfort and Cove, Ark.

141e. *Poly. monodon imperforata* (Pils.), n. var. Rocky Comfort, Mena and Cove. Mr. Pilsbry has thrown a bomb into the monodon-Leai camp, and I merely list these, leaving the description for the article he promises the readers of the NAUTILUS.

153. *Bulimulus dealbatus* (Say). DeKalb, Rocky Comfort, Gilham, Mena.

180. *Strobilops labyrinthica* (Say). Cove, one specimen.

184. *Pupoides marginatus* (Say) [*Lencocheila fallax* of authors]. At Cove under rails in an abandoned field, and at Cerro Gordo under logs; plentiful in company with small red *Poly. thyroides* and *Bifidaria contracta*.

186. *Bifidaria armifera* (Say). DeKalb, Lanesport and Mena.

187. *Bifidaria contracta* (Say). Cove.

247. *Omphalina friabilis* (W. G. B.). DeKalb to Mena, most plentiful at Rocky Comfort.

263. *Vitrea petrophila* (Bld.). Mena. This is the first time this species has been found west of the Mississippi. Three others were also found in this catch that may turn out to be a variety of *V. wheatleyi* (Bld.).

270. *Vitrea indentata* (Say). From Morris' Ferry to Mena.

285. *Vitrea Simpsoni* (Pils.). Morris' Ferry to Mena, both under logs and in the rocks, active.

278-1b. *Conulus chersinus trochulus* Reinh. Cerro Gordo, Hatton's Gap and Chastat Mts., rocks and under logs, rare.

283. *Zonitoides arboreus* (Say). Mt. Pleasant, Texas, to Mena, Ark.

291. *Zon. laeviusculus* (Sterki). One in the Red River bottoms in 1899.

297. *Gastrodonta demissa* (Binn.). Morris Ferry to Mena.

297a. *G. demissa Brittsi* (Pils.). Ultima Thule and Mena. At the latter place in stone piles in the creek bottoms I found a large form. The largest measured 10 mm., and I supposed at the time I had run upon *acerra*.

297b. *G. dem. lamellata* (Pils.). From Morris Ferry to Mena. This was generally found under the logs and very often in company with *demissa*. The largest of both measured about the same, 8 and 9 mm. diameter.

338. *Pyramidula alternata* (Say). From Rocky Comfort to Mena. All rather strongly ribbed and dark in color.

367. *Succinea arara* Say. At Mt. Pleasant, Texas, and Cove, Ark.

As space is valuable in this journal, and my search at these points was far from thorough, I will merely give a list of species found at Hardy and Little Rock, Ark., and Dennison, Texas, not included in the above. Hardy is a particularly good locality, as there is a wide range of species. I found *Vitrea simpsoni* here on my last trip, the most northern and eastern limit so far recorded.

119c. *Polygyra appressa* (Say). At Hardy a highly sculptured variety with small denticle upon the upper lip. This variety is known as Say's "variety A." It measures from 18 to 20 mm. diameter.

119d. *Poly. appressa perigrapta* (Pils.), typical. Little Rock. I also have this from extreme northwestern Arkansas.

120. *Poly. elevata* (Say). Hardy.

125. *Poly. clausa* (Say). Hardy.

134. *Poly. labrosa* (Bld.). Little Rock.

190. *Bifidaria procera* (Gld.). At Hardy in '99.

198. *Bi. curvidens* (Gld.). At Hardy in '99.

199. *Bi. pentodon* (Say). At Hardy in '99.

278-1a. *Comulus fulvus dentatus* (Sterki). At Hardy in '99.

338c. *Pyramidula alternatararinotata* (Pils.). At Dennison, Texas.

239. *Circinaria concava* (Say). Hardy and Little Rock.

340. *Pyramidula solitaria* (Say). Hardy.

342. *Pyr. perspectiva* (Say). Hardy.

346. *Helicodiscus lineatus* (Say). Hardy.